

FULLY DIFFERENTIAL INPUT BUFFER WITH WIDE SIGNAL SWING RANGE

ABSTRACT OF THE DISCLOSURE

A squeezable tail current source for use in a differential operational amplifier is disclosed that regulates the current through a main input differential pair while preventing output distortion and allowing high linearity. The squeezable tail current source includes a first transistor pair that replicates a main input transistor pair, wherein both the first transistor pair and the main input transistor pair receive a common voltage input at their respective gates. The squeezable tail current source also includes a second transistor pair, a bias transistor, a first current source, a folding transistor, and a second current source that biases the folding transistor. These components are configured such that current through the main input transistor pair is maintained as the voltage input varies. In addition, the second current source and the folding transistor isolate the bias transistor and the second transistor pair from a drain voltage of the first transistor pair, thereby causing the first transistor pair and the main input transistor pair to have a common drain bias, which prevents output distortion and allows high linearity to be achieved.